PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.:	09/942,130
Filing Date:	August 29, 2001
Applicant:	Robert McClure et al.
Group Art Unit:	2112
Examiner:	Kim T. Huynh
Title:	EXPANDED FUNCTIONALITY PROTOCOL ADAPTER FOR IN-VEHICLE NETWORKS
Attorney Docket:	DEA-00003 (formerly DGI-105-A)

APPELLANT'S SUPPLEMENTAL BRIEF

This is Appellant's Supplemental Brief for reinstatement of the appeal, filed in accordance with 37 CFR §1.193(b)(2). Appellant's Supplemental Brief is in response to the Examiner's Office Action mailed May 5, 2005. The fee for filing an Appeal Brief pursuant to 37 CFR §1.170(c) was paid on February 11, 2005 when the original Appeal Brief was filed. This Brief is being filed in triplicate.

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Authorities

I. Real Party in Interest

The real party in interest for this appeal is the Dearborn Group, Inc. of Farmington Hills, Michigan, the Assignee of this application.

II. Related Appeals and Interferences

There are no related appeals or interferences.

III. Status of the Claims

Claims 2, 3, and 10-12 are pending in this application. Claim 2 stands rejected under 35 USC §103(a) as being unpatentable over U.S. Patent No. 6,647,323 issued to Robinson et al. in view of U.S. Patent No. 6,591,186 issued to Seki et al.; claim 3 stands rejected under 35 USC §103(a) as being unpatentable over Robinson et al. in view of Seki et al. and U.S. Patent No. 6,081,858 issued to Abudayyeh et al.; claims 10 and 11 stand rejected under 35 USC §103(a) as being unpatentable over Robinson et al. in view of Seki et al., Abudayyeh et al., and U.S. Patent No. 5,764,156 issued to Chaloux (Appellant assumes that claim 11 is included in the §103(a) rejection even though it is not specified in the heading of §5 since it is discussed after claim 10 in the same section); and claim 12 stands rejected under 35 USC §103(a) as being unpatentable over Robinson et al. in view of Seki et al., Abudayyeh et al., Chaloux, and U.S. Patent Publication No. 2002/0039026 to Stroth et al.

IV. Status of Amendments

All amendments have been entered.

V. Summary of the Claimed Subject Matter

Appellant's claimed invention is a protocol adapter for transferring diagnostic signals between a vehicle network on a vehicle and an external computer so that certain vehicle systems can be analyzed and monitored. Diagnostic computers of this type are used for several purposes, including research and development applications, end of line testing and design and product applications, such as quality control, life-cycle testing and burn-in applications. At one time, it was possible to directly couple an external computer to a vehicle network to download diagnostic signals from the network because the computers that were being used for this purpose were compatible with the software protocols being used by the vehicle network. As vehicle network computer systems developed to include new software protocols, older computer hardware became obsolete. Also, newer computer hardware became non-compatible with older software protocols used in existing vehicle networks. Therefore, it became necessary for diagnostics facilities to have several different types of computers running different types of software protocols to be compatible with the several vehicle networks that were in use.

Appellant's invention solves a need in the industry where a separate single unit, referred to herein as the protocol adapter, is electrically coupled between the computer and the vehicle network so that many different vehicle networks using many various protocols, including both old and new protocols, can be made compatible with several different computers, including both old and new hardware. In one embodiment, the protocol adapter of the invention supports several different software protocols, including SAE J1850, GM Class 2 protocol, SAE J1850, Chrsyler protocol, GM Class 1 UART

protocol, ISO 9141-2 protocol, ISO 9141-1989 protocol, ISO 9141-Special protocol, SAE J2284, Dual-wire CAN protocol and SAE J2411, single wire CAN protocol.

VI. Grounds of Rejection

Whether claim 2 should be rejected under 35 USC §103(a) as being unpatentable over Robinson et al. in view of Seki et al.; whether claim 3 should be rejected under 35 USC §103(a) as being unpatentable over Robinson et al. in view of Seki et al. and Abudayyeh et al.; whether claims 10 and 11 should be rejected under 35 USC §103(a) as being unpatentable over Robinson et al. in view of Seki et al., Abudayyeh et al., and Chaloux; and whether claim 12 should be rejected under 35 USC §103(a) as being unpatentable over Robinson et al. in view of Seki et al., Abudayyeh et al., Chaloux, and Stroth et al.

VII. Argument

A. Seke et al. is Not Prior Art

Appellants earliest priority date is 8/30/00, the provisional application filing date. Seki et al's §102(e) date is 6/29/01, which is after its PCT publication date 5/10/01. The Seki et al. foreign priority date 10/29/99 cannot be used as a §102(e) date and, pursuant to MPEP 706.02(f)(1), the PCT filing date 10/23/00 cannot be used as a §102(e) date because it is before 11/29/00. Therefore, Appellant submits that Seki et al. is not prior art and all of the §103 rejections are rendered moot.

B. Independent Claim 2 is Not Obvious in View of Robinson et al. and Seki et al.

Independent claim 2 claims a protocol adapter for transferring diagnostic signals between in-vehicle networks and a computer. The protocol adapter includes circuitry, including an RS232 bus, for transferring the diagnostic signals for a plurality of different protocols. The protocol adapter also includes a device for indicating that signals are being transferred on the RS232 bus and also which protocol is being used by the vehicle network.

U.S. Patent No. 6,647,323 issued to Robinson et al. discloses a vehicle communication link diagnostic tool. A vehicle controller 12 on a vehicle 10 communicates with remote computers, referred to as software tools 16, over a communication network 14, shown only as a wire or line. The vehicle controller 12 includes the various elements and communication architecture shown in figures 2 and 3 for allowing the controller 12 to communicate with the software tools 16.

Appellant respectfully submits that Robinson et al. does not render independent claim 2 obvious for at least the reason that it does not teach or suggest a protocol adapter including circuitry for transferring signals between an in-vehicle network and a computer for a plurality of different protocols, where the circuitry includes an RS232 bus. First, Robinson et al. does not teach or suggest any kind of protocol adapter. The vehicle controllers 12 shown in figure 1 are on the vehicle, and are of the same type of in-vehicle networks that Appellant's claimed protocol adapter transfers the diagnostic signals from. Column 3, lines 8-15 of Robinson et al. states:

> The term "on-board" is described as being located in a substantial permanent manner on or within the vehicle 10. The vehicle controllers may include engine control modules, transmission control modules, break

> system control modules, instrument control modules, and any other on-board vehicle controller.

The software tools 16, including the computer and hand-held device shown in figure 1, are representative of the computer that Appellant's claimed protocol adapter transfers the diagnostic signals to. Appellant's protocol adapter could be used in the Robinson et al. system, but it would be connected between the vehicle controller 12 and the software tool 16. Therefore, Robinson et al. would have to teach or suggest to one of ordinary skill in the art a separate unit in the communication network 14 between the controllers 12 and the software tools 16 to show Appellant's claimed protocol adapter.

Appellant respectfully submits that the Robinson communication network 14 does not teach or suggest one having ordinary skill in the art the claimed protocol adapter. Column 3, lines 15-18 of Robinson et al. states that "the communicate network 14 may comprise any known vehicle communication system such as IES-CAN, GMLAN, KWP2000, J1850, CCD, J1939, but is not limited to such use." However, what Robinson et al. fails to teach or suggest is that a single communication network 14 can support all of the different protocols. Appellant submits that the communication network 14 can be any of the identified protocols, but only one of the listed protocols.

As discussed above, Appellant's claimed protocol adapter is not on the vehicle, but is a separate unit that one can use with different vehicles to allow the various vehicle networks to communicate with various types of computers for different protocols. The protocols that the software tool 16 can communicate with for the vehicle controllers 12 in Robinson et al. are only those that are permanently on the vehicle used by the controllers 12. Appellant's claimed protocol adapter can communicate with many kinds of vehicle networks, both old and new, using many kinds of protocols, both old and new,

to transfer diagnostic signals to many kinds of computers using both old and new hardware, which is not taught or suggested by Robinson et al.

The Examiner states in the Office Action that Robinson et al. teaches an adapter, i.e., the vehicle controllers 12, that communicate over a vehicle communication network 14, i.e., the RS232 bus. As discussed above, the vehicle controller 12 is limited to the protocol it is originally programmed for. Also, nowhere does Robinson et al. teach or suggest one of ordinary skill in the art that the communication network 14 includes an RS232 bus.

The Examiner stated in the Office Action that column 2, lines 36-55 teaches a device for indicating which of the plurality of protocols is being used. This section of Robinson is recreated below:

> The vehicle controller of the present invention monitors a vehicle communication network for messages or requests by diagnostic tools for vehicle data. The vehicle controller includes communication link/interface receive buffers for the communication networks linked to the vehicle controller to determine if diagnostic tools are present on the communication network. Every message from a diagnostic tool includes an identifier which defines the message priority, the address of the diagnostic tool that sent the message, and information describing the requested data. The vehicle controller detects the message, via the receive buffers, and stores the ID or address of the tool and then transmits the requested vehicle data to the diagnostic tool. Thus, the vehicle controller of the present invention has a "plug and play" configuration. The diagnostic tool is plugged into the vehicle communication network, the vehicle controller detects the diagnostic tool, and the vehicle controller transmits data requested by the diagnostic tool without manual intervention.

Appellant has carefully reviewed this section of Robinson et al. and can find no teaching or suggestion to one having ordinary skill in the art that the Robinson et al. system includes a device for indicating which of the plurality of different protocols is

being used. What this section does appear to state is that the vehicle controller 12 monitors whether a diagnostic tool, presumably the software tool 16, is requesting diagnostic information from the controller 12. Appellant submits that this has nothing to do with providing an indication of which of a plurality of different protocols is being used by the controller.

As discussed above, column 3, lines 15-18 only states that one of several protocols can be used on the communication network 14. Appellant respectfully submits that the communication network 14 may be able to operate over one of the several protocols recited in column 3, but it is unable to provide an indication of which protocol is being used. Therefore, Appellant submits that Robinson et al. fails to provide the teachings necessary to anticipate Appellant's independent claim 2.

Furthermore, even if Seki et al. was prior art, Robinson et al. in view of Seki et al. would not render the present invention obvious because Seki et al. does not teach or suggest to one having ordinary skill in the art the combination of a RS232 cable with Robinson's et al. system. Seki et al. only teaches a RS232 cable in a vehicle's navigational system. Robinson et al. in view of Seki et al, does not teach or suggest one having ordinary skill in the art to combine Seki'e et al. RS232 cable that is being used in a navigational system with Robinson's et al. diagnostic system.

C. Dependent claims 3 and 10-12 are not obvious in view of the combination of Robinson et al., Seki et al., Abudayyeh et al., Chaloux and/or Stroth et al.

Appellant respectfully submits the Examiner has improperly combined Robinson et al., Seki et al., Abudayyeh et al., Chaloux and/or Stroth et al. to hold that Appellant's

dependent claims are obvious under 35 USC §103(a). Appellant submits that the Examiner relies on Seki which is not prior art. Under 35 USC §112, ¶4, a claim in dependent form shall be construed to incorporate all the limitations of the claim to which it refers. Therefore, since Applicant respectfully maintains that claim 2 is not obvious in view of Robinson et al., then claims 3 and 10-12 are not obvious in view of Robinson et al., Seki et al., Abudayyeh et al., Chaloux et al., and/or Stroth et al., respectfully.

1. Abudayyeh et al.

Dependent claim 3 requires an LED for indicating that signals are being transferred between the vehicle network and the computer on the RS232 bus. U.S. Patent No. 6,081,858 issued to Abudayyeh et al. discloses a circuit for regulating a random waveform signal to ensure that an LED indicator driven by the waveform signal is visible to the human eye. The Examiner has directed Appellant's attention to a sensor circuit 206 that is used to detect data transfer activity on a PC card bus 110, and then generate an output pulse for an LED transform circuit 205, specifically citing column 4, lines 61 - column 5 line 13. That section of Abudayyeh et al. is recreated below:

> In accordance with the present invention, when activity sensor circuit 206 detects a data transfer (a.k.a. a bus transaction) activity such as a read or a write operation occurring on PC card bus 110, it generates a pulse and outputs such pulse in a signal to LED transform circuit 205. The width of the pulse generated directly correlates to the duration of the transaction. Similarly, the gap between two successive pulses directly correlates to the time between two successive transaction activities. Hence, the wave form of the signal generated by activity sensor circuit 206 may be random over time. Upon receiving the signal generated by activity sensor circuit 206, LED transform circuit 205 regulates the waveform in accordance to the present invention and provides the regulated signal to LED circuit for display. Activity sensor circuit 208 and LED transform

> circuit 209 perform the same functions as their counterparts (i.e., activity sensor circuit 208 and LED transform circuit 209) for transaction activities occurring on PC card bus 111. For the sake of brevity as well as clarity, activity sensor circuit 208 and LED transform circuit 209 are not discussed any further.

This section of Abudayyeh et al. teaches how the LED transform circuit 205 regulates a waveform to provide a signal to an LED circuit for display, such as a read or write operation occurring on a PC card bus 110. However, Abudayyeh et al. has nothing to do with transferring diagnostic signals between a vehicle network and a computer. Therefore, Appellant submits that the Examiner has improperly combined the teachings of Abudayyeh et al. with Robinson et al. and Seki et al. under §103. Further, the LED transform circuit 205 fairly taught and suggested by Abudayyeh et al. does not teach one of ordinary skill in the art a device for providing an indication of activity on an RS232 bus for signals being transferred between a vehicle network and an external computer. Thus, Appellant respectfully submits that Abudayyeh et al. cannot provide the teaching missing from Robinson et al. to make Appellant's claimed invention obvious.

2. Chaloux

Dependent claims 10 and 11 require a plurality of LEDs for indicating which of the various protocols is being used. U.S. Patent No. 5,764,156 issued to Chaloux discloses a transponder detector including an antenna for radiating a power signal to an identification transponder of an unidentified type and for reading a response signal characteristic from the transponder. The Examiner has held in the Office Action that

column 4, lines 26-61 of Chaloux, recreated below, discloses a communication protocol selector and a protocol analyzer that identify signals to be displayed by LEDs.

> A counter 201 counts the number of cycles in the difference signal during each pulse and outputs a logic signal on one of lines S, M and L depending on the cycle count, i.e. whether the pulse duration is short, medium or large. The decoder 204 includes logic for energizing the TEMIC LED 220 when both S and M pulses are detected. The Megamos LED 220 is energized when only M pulses are detected. The Philips LED 220 is energized when M and L pulses are detected.
>
> An afterburst detector 202 detects the presence of a weaker return signal during the pause between two sequential power signals. If a return signal is present, then the T.I. LED 220 is energized.
>
> A 62.5 kHz filter and signal detector circuit 203 detects the presence of a 62.5 kHz component in the differential signal which is characteristic of the Motorola Indala.TM. transponder. If such signal is detected, the Motorola LED 220 is energized.
>
> In the preferred embodiment illustrated in FIG. 5, a microcontroller is to be implemented for the communication protocol selection, analysis and identification text display. The transponder detector 10 comprises an antenna 12 which is controllably powered by a frequency generator 16 and an antenna driver and tuner circuit 17. A receiver circuit 18 reads the response signal obtained from the transponder. The microcontroller provides a communication protocol selector 14 which selects a series of protocols from a protocol memory 19 for controlling the frequency generator and frequency switching control as well as setting the conditions used in the protocol analyzer 20. When the protocol analyzer positively identifies a transponder, the transponder identification signal is provided to a display unit 22 which displays on an LCD screen the corresponding text identifying the model or make of the transponder, or even the model of the key blank to be used.

This section of Chaloux talks about energizing a particular LED 220 when pulses are detected depending on the pulse duration. This section of Chaloux also talks about a communication protocol selector 14 that selects a series of protocols from a protocol memory for controlling a frequency generator. However, Chaloux does not teach or

suggest illuminating a particular LED to provide a visual indication of which of a plurality of different protocols are being used, especially for a protocol adapter that transfers diagnostic signals between a vehicle network and a computer. The protocol selector 14 may select a protocol and the LED 220 may be illuminated for pulses of a certain duration, but the LEDs 220 are not illuminated depending on which protocol is selected. Therefore, Appellant submits that Chaloux does not provide the teaching missing from Robinson et al., Seki et al., and Abudayyeh et al. to make Appellant's claimed invention obvious.

Furthermore, the Examiner held in the Office Action that Col. 5, lines 34-40, recreated below, teaches or suggests one having ordinary skill in the art that a device can have additional LEDs in the system so as to expand various number of protocols in use.

> In the preferred embodiment, the protocol memory 19 is non-volatile memory. To ensure that the device is capable of recognizing new models of transponders as they become available, the protocol memory is replaceable by replacing a memory chip. Alternatively, the memory could also be updated via a data interface.

This section of Chaloux discusses the replacing of the non-volatile memory in order to accommodate new protocols that the system would otherwise not be able to recognize. However, Chaloux does not teach or suggest one having ordinary skill in the art to include addition LEDs, where all of the LEDs are not initially used, such that the additional LEDs are only used after the system has been modified. Therefore, Appellant submits that Chaloux does not provide the teaching missing from Robinson et al., Seki et al., and Abudayyeh et al. to make Appellant's claimed invention obvious.

3. Stroth et al.

Dependent claim 12 requires that the plurality of LEDs include at least one dual-colored LED for indicating which of the plurality of protocols is being used by the protocol adapter. U.S. Patent Publication No. 2002/0039026 to Stroth et al. discloses a power line testing device with a signal generator and a signal detector. Paragraph **[0094]** of Stroth et al., cited by the Examiner, states that dual-colored LEDs D10 and D11 are lit green for indicating that two test functions are available, and are lit yellow for indicating that the two tests functions are not available. Appellant respectfully submits that Stroth et al. has nothing to do with transferring signals between a vehicle network and a computer for a plurality of different protocols, and therefore has been improperly combined with Robinson et al. under §103. Further, Stroth et al. does not teach or suggest using the dual colored LEDs for indicating which of a plurality of different protocols a protocol adapter is currently running. Therefore, Appellant submits that Stroth et al. cannot provide the teaching missing from Robinson et al. to make Appellant's claimed invention obvious.

VIII. Conclusion

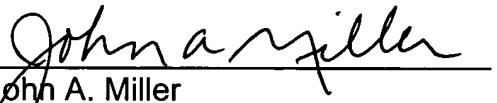
Appellant respectfully submits that all rejections are rendered moot because Seki et al. is not prior art. Appellant respectfully submits that claim 2 is not obvious in view of Robinson et al. and Seki et al. Appellant also respectfully submits that claim 3 is not obvious in view of Robinson et al., Seki et al., and Abudayyeh et al., claims 10 and 11 are not obvious in view of Robinson et al., Seki et al., Abudayyeh et al., and Chaloux, and claim 12 is not obvious in view of the combination of Robinson et al., Seki et al.,

Abudayyeh et al., Chaloux, and Stroth et al. It is therefore respectfully requested that the Examiner's final rejections under 35 USC 103(a) be reversed, and that Appellant's claims be allowed.

Respectfully submitted,

WARN, HOFFMANN, MILLER & LaLONE, P.C.

Dated: November 4, 2005

By: 
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APPENDIX A

CLAIMS APPENDIX

2. A protocol adapter for transferring diagnostic signals between in-vehicle networks and a computer, said adapter comprising:

circuitry for transferring the signals between the in-vehicle networks and the computer for a plurality of different protocols, said circuitry including an RS232 bus for transferring the signals for the plurality of protocols; and

a device for indicating that signals are being transferred between the adapter and the computer on the RS232 bus, said device also indicating which of the plurality of protocols is being used.

3. The protocol adapter according to claim 2 wherein the device includes:

at least one LED to visually indicate activity on a the RS232 bus between the adapter and the computer.

10. The protocol adapter according to claim 3 wherein the at least one LED is a plurality of LEDs for indicating which of the plurality of protocols is being used at any given time.

11. The protocol adapter according to claim 10 wherein the plurality of LEDs is 8 LEDs.

12. The protocol adapter according to claim 10 wherein the plurality of LEDs include at least one dual-color LED.

APPENDIX B

EVIDENCE APPENDIX

There is no information in this Appendix.

APPENDIX C

RELATED PROCEEDINGS APPENDIX

There is no information in this Appendix.